Response Under 37 CFR §1.111
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Appl. No.	:	09/417,065	Confirmation No. 6940
Applicant	:	Stefan B. EDLUND et al.	
Filed	:	October 13, 1999	
TC/A.U.	:	3628	
Examiner	:	Nga B. NGUYEN	
Docket No.	:	AM9-99-066	
Customer No.	:	23334	

37 C.F.R. 1.131 AFFIDAVIT

I, the undersigned, inventors of the above-referenced patent application, hereby declare the following:

1) The pending claims of our above identified patent invention were rejected under 35 U.S.C. §103(a) based on the prior art reference of Rackson et al. (U.S. 6,415,270) with an effective filing date of September 3, 1999 based on provisional application number 60/152,473 filed on September 3, 1999 (hereinafter referred to as "Rackson").

2) The invention described in the above referenced patent application was reduced to a writing and signed by the undersigned applicants prior to the September 3, 1999 date of Rackson. In particular, the relevant portion of our invention Disclosure upon which the above referenced patent application was based is attached herewith.

We, the undersigned, declare all of the above statements are made on our own knowledge, the above statements are true and correct, and the above statements are made on information that we believe to be true. We understand that false statements or concealment in obtaining a patent will subject us to fine and/or imprisonment or both (18 U.S.C. §1001) and may jeopardize the validity of the above identified patent application or any application issuing therefrom.
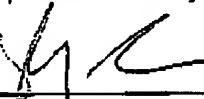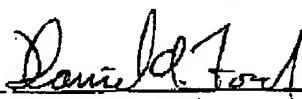
Stefan B. Edlund	Daniel A. Ford	Reiner Kraft
March 10, 2004	March 10, 2004	March 10, 2004

AM9-99-066   1   09/417,065

Personal Shopping Agent to manage   on web based auctions for buyers automatically

Disclosure ARC8-1999-0034

Created By: Reiner Kraft   Created On:
Last Modified By: Reiner Kraft   Last Modified On:

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Required fields are marked with the asterisk (*) and must be filled in to complete the form.

Summary

Status	Under Evaluation
Processing Location	ARC
Functional Area	DPB - Computer Science - (A.K. Chandra)
Attorney/Patent Professional	Ray Strimaitis/Almaden/IBM
IDT Team	Ray Strimaitis/Almaden/IBM
Submitted Date	
Owning Division	RES
PVT Score	46

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IDT Selection

IDT Team:	Attorney/Patent Professional:
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Response Due to IP&L :	

Main Idea
*Title of disclosure (in English)
Personal Shopping Agent to manage bids on web based auctions for buyers automatically

*Idea of disclosure

1. Describe your invention, stating the problem solved (if appropriate), and indicating the advantages of using the invention.
The invention is related in the area of Internet Search Engine and E-Commerce technology. Today's web based auction sites, such as eBay (http://www.ebay.com), Onsale (http://www.onsale.com), or Yahoo (http://auctions.yahoo.com) allow users to bid for items they want to buy. The great advantage of this business model is that the potential buyer has the possibility to define a price, what he/she is willing to pay for this item. A price thus is not fixed, it's dynamic. Because of this, the popularity of auction based web sites is growing rapidly. Also more and more user get involved and take advantage of this auction based buying on the World Wide Web (WWW). In the near future

Page 1

Personal Shopping Agent to manage .. on web based auctions for buyers automatically

probably dynamic prices for buying items will become a tandard.

The problem our invention addresses is the difficulty for the user of managing this kind of buying. There are several problems for a potential buyer:

1) Web based auctions produce fierce competition. Because of the possibilities of the Internet the competition is not geographically limited. Also there are no time constraints. Users are able to bid 24 hours a day. Because of this competition, it is not guaranteed that a user eventually get the item he/she was looking for.

2) There are several web based auction sites (see above) and the number of these sites will increase. One and the same item can be sold on different sites simultaneously and independently. (e.g. a seller wants to increase the probability of selling the item, so he/she submits the same item on different web based auctions)

3) Most times a buyer needs to have not a particular item. The item could be a mass product (e.g. CD-ROM, music cassette, etc.) . So one auction site can offer mass products items in several. auctions simultaneously from different sellers. Also there can be more then one auction web site, which offers this type of item (for instance a compact disc of Madonna's greatest hits is a mass product. There exist thousands of copies. So there could be several ongoing auctions on the same or different auction web sites from different sellers). The problem for the user is to choose the best auction for the desired item.

Our invention will solve these problems in the following way:
Users are able to manage their auctions sites. This includes adding, updating, and removing auctions sites. For every auction site users have to provide a configuration profile, for which we will provide a software tool to create this in a convenient way. This software will produce the configuration profile information for each selected auction site. The configuration profile information basically contains a protocol to access the auction site, how to retrieve a list of current auctions, how to search an auction site, how to place or cancel a bid, user and password information for the auction site, along with additional information about the site (e.g. format specification for extraction of data). Note: User and password information is usually required on auction sites in order to use it.
Once our invention knows, what auction sites are available, and how to communicate with them (using the configuration profile information provided), user are able to select or define an item, they are interested to buy. They will set a price range of what they are willing to pay for the item.
Our invention will then automatically contact the defined auctions sites, and perform a query in specific time intervals (polling), whether the selected item is currently available to buy. It will then automatically select the auction, with the lowest current bid and places a bid there. Overall it makes sure, that at the end of all auctions

1) The user will have placed the highest bid on the item, so that he/she actually is able to buy it.
2) The defined bid maximum will not be exceeded.
3) The user will be the winner of only one auction for the specific item. That means that a user eventually has the desired amount of the item.

Our invention will continuously monitor the auctions and uses algorithms described below to ensure that these goals are fulfilled.

The following example will explain, how the invention could be used in order to buy the new Madonna CD mentioned above:

A user first registers to at least one auction web site. By registering he/she will be provided with a user id and a password. The user enters this information into our invention and creates a configuration profile for this auction web site. After this our system is able to communicate with this auction site. At this time the user could register at more auction web sites and insert this data and

Page 2

Personal Shopping Agent to manage _ on web based auctions for buyers automatically

create mor auction sites profiles.

Then the user will ent r his/her buy wish al ng with th maximum amount of money he/she is willing to pay for it. In this case the "Madonna Greatest Hits" CD. Our invention will now query the auction site, whether the desired CD is currently available for bidding. In case that the CD is available and the current bidding price is below the defined maximum, it will automatically place a bid. Then it will monitor the bid and place additional bids if necessary. For instance it could happen, that someone placed a higher bid, and the auction terminated. Our system then will search for another ongoing auction, which would be appropriate. Also it could place more bids on different auctions, if it seems to be necessary to enhance the probability of buying the desired item. In case, that the time is running out on an auction, where it holds the highest bid, and there are also high bids in other auctions placed, it will cancel these bids to ensure, that really one "Madonna CD" is bought at the end.

Overall our system will likely become a significant e-commerce tool, which helps users to manage the more and more complicated dynamic buying process. Thus we believe that this idea will have a high market value with the growth of e-commerce on the World Wide Web and therefore needs to be protected.

2. How does the invention solve the problem or achieve an advantage,(a description of "the invention", including figures inline as appropriate)?

System Architecture

Our invention consists of the following components:

1) Auction Profile Database
2) Auction Profile Configuration Tool
3) Item Selector
4) Item Search Manager
5) Item Database
6) Auction Bid Controller
7) Auction Command Interface
8) Auction Confirmation Receiver
9) Result Definition and Verification Unit

The following contains a detailed description of these components:

First, the *"Auction Profile Database"* stores auction profiles of web based auction sites. An auction profile has to contains the following information:

a) How to access an auction site (protocol, URL, etc.)
b) user id and password of the user (authentication method)
c) Command language to place and cancel bids
d) How to perform search for items
e) General description of how to extract item information
f) Format of search results for items to extract these
g) Format of notification for bid status, and other notification events

Overall these profiles describe how to interact with a web based auction site and how to automatically retrieve desired data of items. Although the functionality of these sites is typically the same, the way how to access the data differs. The auction profiles provide a way to access these sites in a standard way. The format to store and describe auction profiles could be based on the *Extended Markup Language (XML)*. To describe the format of a web document in order to extract specific data we could use *TAPS* technology. *TAPS* is also based on *XML* and allows to describe a

Personal Shopping Agent to manage ... on web based auctions for buyers automatically

web document. With the help of this description (e.g. a DTD - Document Type Definition) our invention is abl to locate for e.g. a description of an item in a web document. However, *TAPS* is just one way of retrieving this information. We could also use existing parser and web filter technology to retrieve the required information from these web sites.

The *"Auction Profile Configuration Tool"* helps users to generate and store the auction profiles in the *Auction Profile Database*. Because the syntax of an auction profile can become complex, the task of this tool is to remove the complexity from the user. It might use a graphical user interface along with a user friendly wizard, to guide the user through the process of creating an auction profile. Also auction profiles for popular auction sites could be already integrated in *Auction Profile Database*. So there would be no need to generate auction profiles for these sites. However, authentication information is user dependent and needs to be added to the auction profile. Also, the tool is able to update and delete auction profiles.

The *"Item Selector"* provides a mechanism for the user to enter a desired item. It uses the *"Item Database"* to store information of items (properties) for further reuse. The user enters the item information typically in an electronic form (e.g. using a textbox). An item consists of a name, an optional description, or an unique identification number (e.g. ISBN for books). Our *Item Selector* could also present a list of the stored items in the *Item Database* to the user for selection. If the user is finished with an item selection, a query for the item will be performed first against the *Item Database*. The goal is to retrieve additional information for an item if available. This could help to improve the search accuracy of the *"Item Search Manager"* component. The complete item information along with an optional description is then passed to the *"Item Search Manager"* for further processing.

After the *"Item Search Manager"* receives the item information from the Item Selector component, it will perform a query for this item on all available auction web sites stored in the *Auction Profile Database*. It will use the auction profile information stored in the *Auction Profile Database* to build the correct query strings. The goal is to find out, which web based auction sites have the item currently available for bidding. The auction sites will produce search results and return these results to the *Item Search Manager*, which in turn will consolidate this information to one list. The *Item Search Manager* then will parse these result pages and extract the required information. It will also collect additional information of the item (e.g. a more detailed description) if available and store this item information in the *Item Database* for further reuse to enhance search accuracy. To extract the item information from the result pages of the auction sites, it uses the information stored in the *Auction Profile Database*. As a result it will generate a list containing the following information:

a) Item Name
b) Item ID (if available)
c) Item Description (if available)
d) Multimedia Description (e.g. picture, video, etc., if available)
e) list of all current auctions, where the item is currently available for bidding, along with current bid price, auction duration, etc.
This list will be passed to the *"Result Definition and Verification Unit"* for further processing. Another functionality of the *Item Search Manager* is, that it will perform periodic querying of the available auction sites for items the user is interested in. So it will generate an updated list and forwards this list to the *Auction Bid Controller* for auction status controlling. Also it will perform querying on demand of the *Auction Bid Controller*.

The *"Result Definition and Verification Unit"* component receives the item information (with description) from the *Item Selector*, in which the user is interested in, along with a list of auctions generated from the *Item Search Manager*. Basically this component will present the current bid range of all the auctions to the user and will ask then for a maximum bid, the user is willing to spend for

Page 4

Personal Shopping Agent to manage ..... on web based auctions for buyers automatically

the item. It could also be th case, that there are no auctions available for the d sired it m. In this case the user has to specify another item and the process will start from the beginning.
After the user defines a bid maximum, the complete information (includes item, list of auctions for the item, maximum bid) will be passed to the *Auction Bid Controller*, which is the key management component for all bidding on behalf of the user.

As explained above, the *Auction Bid Controller* component is responsible for the whole bid management process. It receives its task from the *Result Definition and Verification Unit*. With this information, it will start to look for an auction, which offers the desired item for the lowest price. It will then forward a bid request to the *Auction Command Interface*. It will keep track of the status of all auctions. If a bid request was successful, it will receive a notification from the *Auction Confirmation Receiver*. The corresponding auction in the list will be then marked as active. There could be zero or more auctions marked as active at any time. From time to time it will request an status update from the *Item Search Manager*. The reason for this is to find out, whether there are additional auctions for the particular item available, which were not listed before. It could be the case, that a new auction was detected for the item, which asks for a lower price then the current active auction. In this case, the *Auction Bid Controller* will try to place a smaller bid there. If successful, it will cancel other active auctions with a higher bid price. The overall goal is to have at least one active auction, which should produce the lowest price for the item.
In case the *Auction Bid Controller* receives an outbid notice from the *Auction Confirmation Receiver* for an active auction, it has to determine, whether it makes sense to place a higher bit on this auction, or whether there's an auction where even a lower bid could be placed, in order to have the highest bid. In case there are no other auctions and the maximum price range for the item has not exceeded, it will request a higher bid for the auction from where it received the outbid notification. Finally, if the *Auction Bid Controller* receives a "end of auction" notice, where it placed the highest bid (and therefore won the auction), the item is marked as "success". All other active auctions will be canceled (a cancel request will be send to the *Auction Command Interface*). The information of the auction, which was successful, will be passed to the user. So that the user is able to get in contact with the seller.
Note that the *Auction Bid Controller* will only finish execution, if

a) an item could be successful bought
b) there are no auctions available for an item
c) all auctions available require a bid amount higher then the desired maximum
d) a user wished to cancel all auctions for the item

Otherwise it will continue to request new searches, bid requests and cancellations, until its goal is reached.

There are two components, which are responsible for the communication with the auction sites. First, the *Auction Command Interface* will receive bid and cancellation requests from the *Auction Bid Controller*. It will use the information stored in the *Auction Profile Database* to transform the requests into commands, the corresponding auction site understands. Then it will send the request to the auction site (e.g. using Internet TCP/IP communication). To sum up, the *Auction Command Interface* is responsible for all outgoing requests.

Second, the *Auction Confirmation Receiver* will handle all incoming requests, such as bid conformations, outbid notifications, etc. These notifications will be delivered from the auctions sites for instance using email communication. All the requests will be transformed in a way, that the *Auction Bid Controller* will understand. The information it needs is stored in the *Auction Profile Database*. With this information the incoming notification can be parsed and the important information be extracted.

Page 5